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Preservation of Wild Flowers in Pennsylvania

By E. M. Gress, Ph. D.

Bureau of Plant Industry



ENJOY BUT DO NOT DESTROY WILD FLOWERS

F. P. WILLITS, *Secretary of Agriculture*

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PENNSYLVANIA DEPARTMENT OF AGRICULTURE

Organization and Services

FRANK P. WILLITS, *Secretary*

JOHN M. MCKEE, *Deputy Secretary*

This Department is essentially a service agency created by legislative enactment to deal with administrative, regulatory, investigational, and educational problems which can best be solved through public rather than individual action. The organization provides for coordination and cooperation with the Pennsylvania State College and the U. S. Department of Agriculture. The Department operates through the following bureaus:

ANIMAL INDUSTRY: T. E. MUNCE, *Director and State Veterinarian.*

Prevents and eradicates transmissible diseases of animals and poultry, including tuberculosis of animals, in cooperation with Federal Government.

Demonstrates to veterinarians control methods for transmissible animal diseases; Supervises vaccination for and the prevention of hog cholera, anthrax, black leg and hemorrhagic septicemia;

Protects public from unwholesome meats through ante and post mortem examinations of animals at slaughtering establishments;

Inspects, licenses and furnishes information as to breeding, soundness and formation of stallions and jacks standing for public service;

Enforces law requiring licensing of dogs and providing for protection of livestock and people from attacks of uncontrolled dogs;

Maintains laboratory for diagnostic research and experimental projects.

PLANT INDUSTRY:

C. H. HADLEY, *Director.*

Tests agricultural seeds for purity and germination, and enforces State Seed Law; Inspects orchards, parks, farms, and plant imports for injurious insects and plant diseases:

Inspects and licenses Pennsylvania nurseries, and licenses all dealers in nursery stock;

Makes investigations for the control of injurious insects and plant diseases; including field tests of insecticides, fungicides and weed killers;

Enforces laws governing apicultural practices, disease control and housing; Places and enforces quarantines and carries on eradication campaigns against insect pests and plant diseases;

Inspects and certifies potatoes for seed purposes;

Maintains collections of insects, plant diseases, plants, and seeds, and identifies specimens.

FOODS AND CHEMISTRY:

JAMES FOUST, *Director.*

Accomplishes its purpose of protecting Pennsylvania homes against harmful foodstuffs by sampling, analyzing, and bringing prosecution under the laws relating to foods and non-alcoholic drinks, including milk, cream, butter, ice-cream, eggs, sausage, fresh meats, soft drinks, fruit syrups, vinegar and hundred food products;

Regulates and issues licenses for the manufacture and sale of oleomargarine;

Licenses and regulates egg-opening plants and cold storage warehouses, maintaining regular inspection and enforcing twelve-month storage limit;

Inspects milk plants and creameries and regulates weighing, testing, buying and selling of milk and cream on a butterfat basis;

Protects honest manufacturers, importers, selling agents and ultimate users of feeding stuffs, fertilizers, lime products, linseed oil, paint, putty, turpentine, insecticides and fungicides, by means of annual registrations followed by inspections, analyses, prosecutions and the publication of the analyses of these products;

Analyzes special samples for residents of the State at the rate of \$1.00 a sample for feeding stuffs, lime products and linseed oils.

P. R. TAYLOR, *Director.*

MARKETS:

Investigates and assists in the marketing of farm products; at present chiefly grain and hay, fruits and vegetables, poultry and eggs, and tobacco;

Compiles and distributes daily market information as to supplies, shipments and prices;

Advises growers on transportation of agricultural products;

Assists cooperative associations and public markets;

Establishes standard grades of farm products and maintains inspection.

L. H. WIBLE, *Director.*

STATISTICS:

Assembles and disseminates essential statistics and facts pertaining to the agriculture of the State, from monthly reports rendered by hundreds of volunteer crop correspondents, information which assists the producer in his sales and interests all industries which deal with agricultural products;

Cooperates with U. S. Bureau of Agricultural Economics in joint crop and livestock reporting and publishes annual and monthly summaries of the data;

Compiles dates of county and local fairs and assembles data pertaining to their success and results during each year.

PRESERVATION OF WILD FLOWERS IN PENNSYLVANIA

By E. M. Gress, Ph. D.¹

Early History

The early settlers of Pennsylvania found the land covered with forests except some portions which were called "Barrens." These were "not so called from the sterility of soil, but from the circumstances that the Indians for years prior to Penn's arrival, and subsequently to improve their Great Park for hunting purposes, fired copse or bushes as often as their convenience seemed to call for it, and thus had prevented portions of Pennsylvania from becoming covered with forests." This great climax forest had never been disturbed by civilized man. It teemed with all kinds of wild life.

Proud's History of Pennsylvania gives us a glimpse of the stable natural condition of Pennsylvania of about two and one-half centuries ago. Volume I contains letters which William Penn wrote to friends in London in 1683. On page 249 he speaks of the trees: "Black walnut, cedar, cypress, chestnut, poplar, gum-wood, hickory, sassafras, ash, beech, and oak of divers sorts, as red, white and black; Spanish, chestnut, and swamp, the most durable of all. Of all which there is plenty, for the use of man." From this list Penn omitted many of our important trees. It is surprising that he made no mention of the pines.

In speaking of the fruits he says: "The fruits, that I find in the woods, are the white and black mulberry, chestnut, walnut, plums, strawberries, cranberries, hurtleberries, and grapes of divers sorts." He remarks further: "There are divers plants, that not only the Indians tell us but we have had occasion to prove by swellings, burnings, cuts, etc., that they are of great virtue, suddenly enring the patient, and for smell, I observed several, especially one, the wild myrtle; the other I know not what to call, but are most fragrant."

Of the flowers he says: "The woods are adorned with lovely flowers, for color, greatness, figure and variety. I have seen the gardens of London best stored with that sort of beauty, but think they may be improved by our woods: I sent a few to a person of quality this year, for a trial."

Penn was also interested in the birds and other animals as is shown on page 250 where he wrote as follows: "Of living creatures:

Fig. 1. Loaned by the Pennsylvania Department of Forests and Waters. All photographs by George B. Parker. Cover page illustration is Mountain Laurel (*Kalmia latifolia* L.), a beauty of the Pennsylvania mountains.

fish, fowl, and the beasts of the woods; here are divers sorts, some for food and profit and some for profit only: For food, as well as profit, the elk, as big as a small ox; deer, bigger than ours; beaver, raccoon, rabbits, squirrels; and some eat young bear, and commend it. Of the fowl of the land, there is the turkey, (forty and fifty pounds weight) which is very great; pheasants, heath birds, pigeons, and partridges, in abundance. Of the water, the swan, goose, white and gray brands, ducks, teal, also the snipe and curloes, and that in great numbers; but the duck and teal excel; nor so good have I ever eat (en) in other countries. Of fish, there is the sturgeon, herring, rock, shad, cats-head, sheeps-head, eel, smelt, pe(a)reh, roach; and in the inland rivers, trout, some say, salmon above the falls.

The creatures for profit only, by skin, or fur, and that are natural to these parts, are the wild-cat, panther, otter, wolf, fox, fisher, minx, musk-rat; and of the water, the whale for oil; ; to say nothing of our reasonable hopes of good cod, in the bay."

Nature's Balance

Undisturbed nature reaches a state of equilibrium in which changes are slight. When William Penn wrote these letters to his

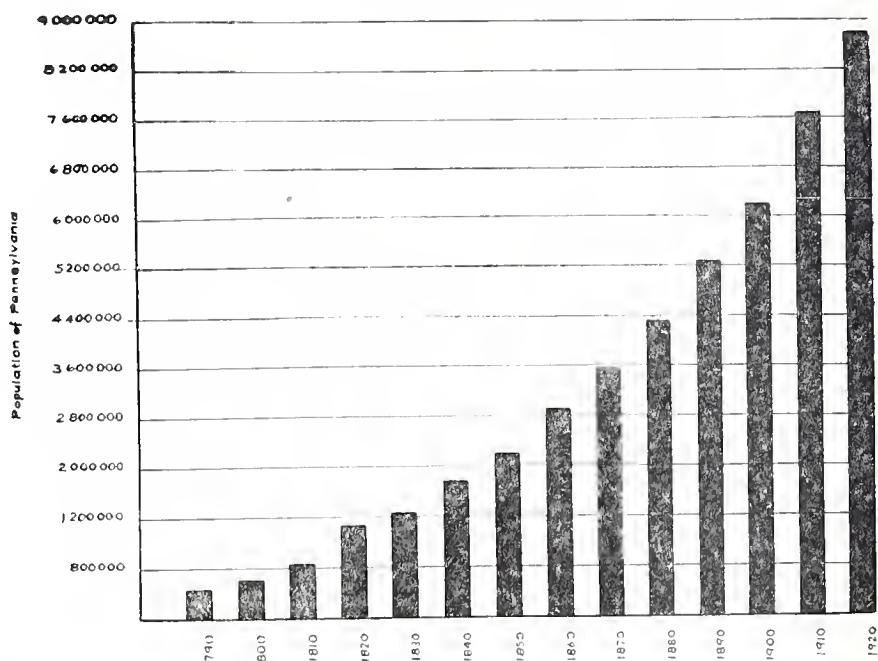


Chart 1. When but few persons traveled the main highways and there were large areas of waste land, the picking of wild flowers and plants from nature's bounteous supply did no harm. Conditions are changed now with thousands of persons passing over the main highways daily. The area of wild plants has been reduced, and unless our roadsides are to be denuded, the picking of blossoms and plants must cease and the rule of the nature lover be: "Enjoy but do not destroy."

friends in England, Pennsylvania was in this state of equilibrium. Birds were abundant, being held in check only by the supply of food, by other animals that preyed upon them, and by climatic conditions. The fertile valleys and fruitful forests furnished an abundance of food for the larger animals. The sparkling, unpolluted water of the streams and rivers were healthful habitats for many kinds of fish. The varied climatic condition, the pure air and fertile soil produced in abundance upwards of 3000 species of flowering plants, ferns and mosses.

Equilibrium Distributed

Enter civilized man, and in a little over two centuries what has happened? Fire, axe and saw have almost completely annihilated our virgin forests. The gun and trap along with the destruction of nesting and feeding places have reduced and in some cases utterly destroyed the birds, once so abundant. Along with the destruction or reduction of the bird life, nature's balance has been disturbed and numerous injurious insects have increased almost beyond control. The rod, seine and stream pollution have almost completely freed the waters of our streams and rivers of their wild life. Fires, removal of forests, drainage, smoke and fumes, trampling feet, and thoughtless wild flower lovers have almost exterminated some of Pennsylvania's most cherished wild flowers.

Nature's Beauty Neglected

There is a reason why the preservation of our wild flowers should be among the last to receive attention. Self-preservation is the most marked instinct of any animal. Food, shelter and clothing are uppermost in man's mind. Therefore, our early settlers first turned their attention toward agriculture and manufacturing at the expense of the forest and natural beauty of the state. The forests were ruthlessly destroyed, no attention being given to their conservation until it became an economic consideration. Likewise the birds were destroyed until man began to realize that they were necessary to keep in check those insects that were causing an economic loss. Hunting and fishing were primitive methods of securing food and clothing. As other methods took their place these instincts were satisfied by a continuation of hunting and fishing for pleasure; therefore when game and fish became so scarce that no pleasure was derived from these sports, then and only then did man begin to think of conserving the animals of the forest and the stream.

Struggle for existence is man's first thought, but he, whether civilized or savage, has emotions that cannot be satisfied by the ac-

quisition of food, shelter and clothing only. These aesthetic, ethical and religious emotions of the human being can find comfort and satisfaction only in the beautiful, the good and the divine. They distinguish the human being from all other animals, and their culture and development raise civilized man above the savage, the height being directly proportional to the degree of development.

The man, woman and child in whom the aesthetic feelings have been awakened and cultivated by good music, fine art and the beauties of nature will have greater regard and reverence for that which is good and true and will practice the golden rule of good fellowship and brotherly love and will more firmly believe that, "The Hand that made us is divine." They, too, can feel with Wordsworth the meaning of the words:

Therefore am I still
A lover of the meadows and the woods
And mountains, and of all that we behold
From the green earth; of all the mighty world
Of eye and ear, both what they half create
And what perceive; well pleased to recognize
In nature, and the language of the sense,
The anchor of my purest thoughts, the nurse,
The guide, the guardian of my heart and soul,
Of all my moral being."

or with Channing when he said,—"But every husbandman is living in sight of the works of a divine artist; and how much would his existence be elevated could he see the glory which shines forth in their forms, hues, proportions and moral expressions."

In considering the beauty of nature and its influence upon character, may we quote Alfred Russel Wallace* who says: "Living things.....are here for a purpose in some way connected with us; and if in our blind ignorance or prejudice we destroy them before we have earnestly endeavored to learn the lesson they are intended to teach us, we and our successors will be the losers—morally, intellectually, and perhaps even physically..... Yet during the past century, which has seen those great advances in the knowledge of nature of which we are so proud, there has been no corresponding development of a love or reverence for her works; so that never before has there been such widespread ravage of the earth's surface by destruction of native vegetation, and with it of much animal life, and such wholesale defacement of the earth by pouring into our streams and rivers the refuse of manufactories and of cities; and this has been done by all the greatest nations claiming the first place for civilization and religion!"

*Wallace, Alfred Russel, *The World of Life*, pp. 300-301. Moffat, Yard & Co., N. Y. 1911.

Provisions for Recreation Needed

We are wont to divide the twenty-four hours of the day into three equal periods: one part to be devoted to work and the production of the necessities of physical life, another to sleep and rest, and a third to recreation and the pursuit of those things that are productive of strong moral and christian character.

This third period which we may call the recreation period is the one for which we fail to make provision. How shall it be spent? Part of it may be spent in a library reading good books or in the museum observing and studying historical and natural exhibits or in the art gallery and music halls enjoying the masterpieces of the world's great artists and musicians. The theatre attracts many where sometimes the things that are seen and heard are none too elevating. Some go to the parks, the athletic field and the golf links. All of these agencies are useful and legitimate and should be established and maintained with a view to providing wholesome and elevating recreation and entertainment.

A large number of people living in smaller towns and rural districts do not have access to libraries, museums, art galleries, music halls, theatres, athletic fields and golf links. Some of these find pleasure and recreation in hunting and fishing, sports which are being given consideration and rather ample financial support.

But there still remains a great, probably the greatest, class of people who find no recreation and enjoyment in the above named activities. Many of these spend much of their recreational period in strolling or motoring out into the open fields, along some babbling brook or into the groves, "God's first temples."

It is during this eight-hour recreational period that evil thoughts enter the idle mind and that most crimes are perpetrated. On the other hand good clean, wholesome recreation and enjoyment will direct and lead the mind toward those things which are elevating in character. It, therefore, behooves us to give this period thoughtful consideration and financial support, and to preserve the natural beauty and resources of our state so that the mighty army of citizens who find pleasure in the "pathless forest" and in the beautiful wild flowers, birds and other wild life may be filled with satisfaction, contentment and inspiration.

Pennsylvania Beautiful

If we wish to continue the proud praises of Pennsylvania's great natural resources and beauty, we must think, talk and practice conservation. Fortunately, we have already realized that our forests, birds, fish, and game need protection, with the result that success is assured, but little if anything has yet been done to preserve our beautiful native wild flowers.

Pennsylvania is spending millions of dollars every year to improve her highways and her forests. She is establishing in her beautiful forests and along her improved highways camp sites to which she invites and welcomes campers, tourists, and lovers of nature.¹ No other state in the Union is better endowed in this respect than is Pennsylvania, with the Lincoln Highway extending from

PRESENT FOREST AREA OF PENNSYLVANIA

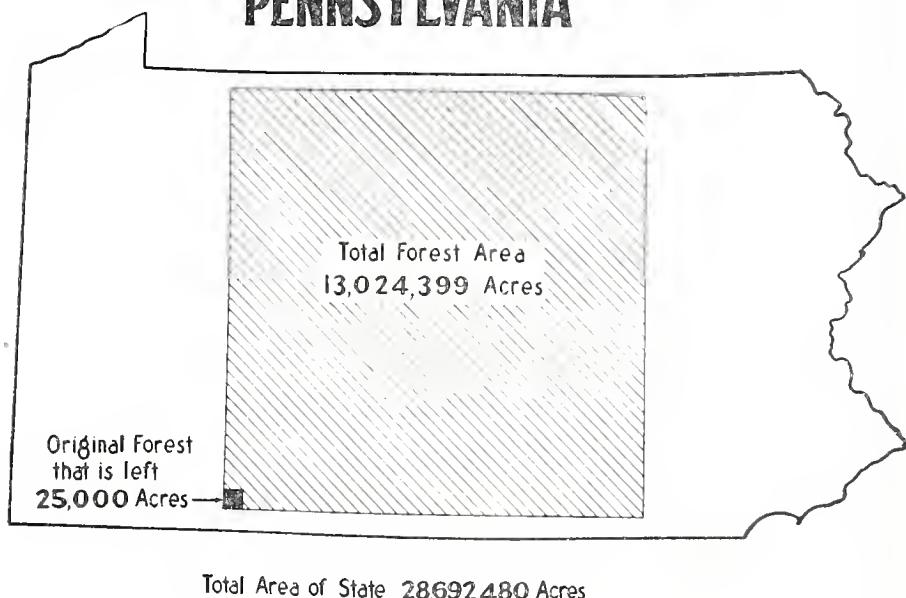


Fig. 1. Few realize that Pennsylvania with her tremendous commercial, manufacturing and agricultural industries still has approximately one-half her area as forest land. This area is coming to be highly valued as potential recreational or health building grounds. In the past hunters and fishermen have been most interested in woodlands. With the coming of the automobile, however more attention is being given to the recreational possibilities of these areas. The mountainous belt extends from the southwest to the northeast corner of the State and, with the many improved highways and the general use of automobiles, this area is brought within a few hours' ride of Pittsburgh, Philadelphia, New York and other centers of population in the east. Reforestation and the preservation of wild flowers are two important features in making Pennsylvania a recreational center and a more healthful and attractive State in which to live.

her eastern to her western border through the beautiful South Mountain and across the many ranges of the forested Alleghenies; with the National Pike so near to her southern border in the eastern part of the state and extending into the mountains of the southwestern counties; with the William Penn Highway following

(1) The road census by the Pennsylvania Department of Highways indicates that the average daily summer traffic on the main improved highways is around 2,000 vehicles per day even in remote sections, while it is much larger near centers of population.

the valley of the lower Susquehanna and skirting the banks of the blue Juniata as they break through the gaps of the Blue Mountains above Harrisburg. There, too, is the Lackawanna Trail extending north and south through the rugged mountains and glaciated lake region of eastern Pennsylvania. Many other improved roads of equal beauty are found in all parts of the state.

Nothing will improve the beauty along these public highways more than to assist nature in retaining her virgin forests of deciduous and evergreen trees embellished with a lower layer of mountain laurel, rhododendron, dogwood, azalea, arbutus, orchids, trillium, goldenrods, asters and many other equally beautiful flowers. Nothing will mar the beauty along these same highways more than the careless and thoughtless destruction of these trees, shrubs and flowering plants.

The Keystone State

Pennsylvania has aptly been called the Keystone State on account of her geographical location. The appellation, however, is equally appropriate from a botanical standpoint. Within her borders are the northern limits of many southern plants that have migrated down the Monongahela river in the western part of the state and up the valleys of the tributaries of the Potomac in central Pennsylvania and of the Susquehanna and the Delaware in the east. Plants that are native to a salt water habitat and a sandy coastal plain condition have crossed the southeastern border line and are found in the vicinity of Philadelphia. A great number of plants native to the cold north have been left in the bogs and mountains of northern counties as relicts of the glaciers which advanced to a line extending from the Delaware Water Gap, in Monroe County, in a northwesterly direction to the north central border of the state and then in a southwesterly direction to Beaver County. In the west end of the state are found plants which are natives of the Mississippi valley and the Middle West. These have migrated up the Mississippi and along the Ohio valley and have found suitable living conditions in a few of our southwestern counties. On the sandy soil of Presque Isle in Lake Erie are found plants that do not grow elsewhere in Pennsylvania, the seeds, no doubt, having been carried there by migrating birds and other agencies.

So varied are the soil conditions, due to the different geological formations and to the altitude which ranges from sea level to mountains that exceed 3000 feet in height, that Pennsylvania ranks high in the number of species of flowering plants, ferns, mosses and liverworts. Among these are some of the most beautiful flowering shrubs and herbaceous plants that are found anywhere in the world. Is it possible to find more beautiful plants than our mountain laurel,

rhododendron, azalea and various orchids? These are among the plants which are in process of extermination, particularly in the accessible places and along our streams and highways, because of the eagerness with which they are sought by thoughtless admirers.

Wild Flower Depredators

Plant destruction is perpetrated by persons who do not stop to contrast the freshness and beauty of the plant in its natural habitat with the withered condition and the faded beauty which invariably ensues a few minutes or at most a few hours after picking. It is not an uncommon occurrence to see an automobile party with large bunches of flowering dogwood, azaleas, mountain laurel, rhododendron or other flowering plants. These plants are carried in the automobile exposed to the wind caused by the rapid movement

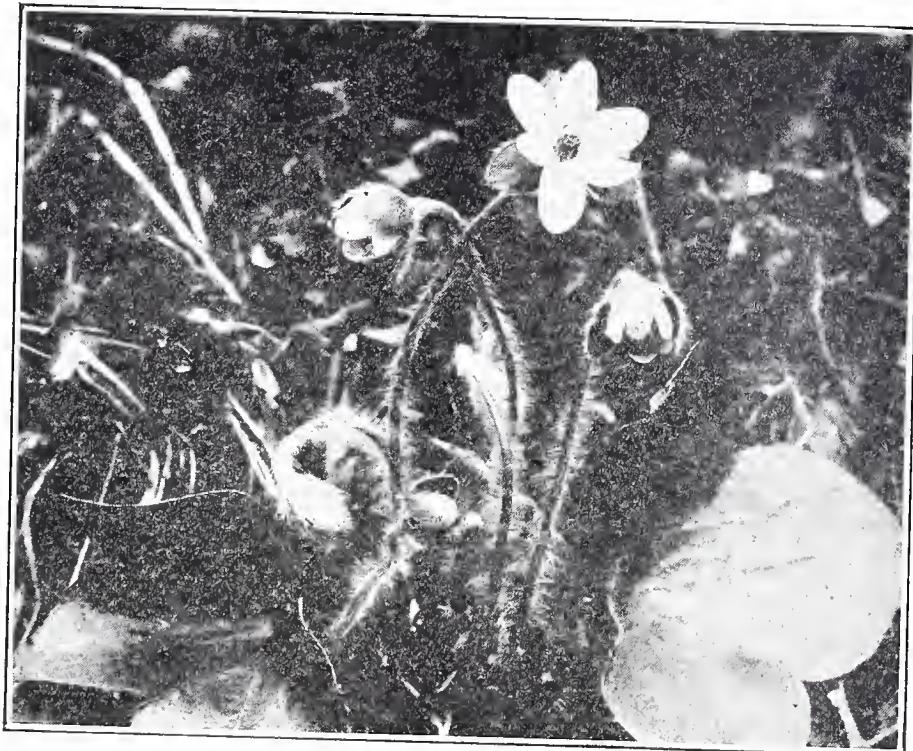


Fig. 2. *Hepatica (Hepatica triloba Chaix.)* A harbinger of spring, along with the blue bird and the robin.

of the machine. The drying effect of this current of air which may be noticed by holding a wet handkerchief in it for a short time, will wither the flowers and leaves in a few minutes. When the party has reached its destination, or probably long before, the bunch of flowers will be thrown out by the roadside and the plant from which they have been so carelessly and thoughtlessly plucked will be left in a scraggly, unsightly condition. If it happens to be a

plant that has been pulled up by the roots or one that depends upon the formation of seeds for production, it may be entirely eradicated from the particular spot never to be enjoyed by another passerby.

Many of our native plants close to the towns and cities are inevitably crowded from their haunts by invasion. They have been exterminated by trampling feet and by the dust and smoke of industry. They have been overcome in the struggle for existence by the hardy weeds which follow the trail of man.

Beyond these destroying agencies in the open country, and along our streams and wooded hillsides, many rare plants are thoughtlessly collected and finally exterminated by those who love the flowers and are interested in their cultivation. Often have we seen the ferns and rare plants lifted from their cool shady spots in the forest, or from the bank of a stream, only to be carried home and planted in places where soil, temperature, and light conditions were so vastly different that they died in a short time.

These collectors fail to consider that a wild plant taken from the woods and transplanted to the garden or lawn will, in many cases, not grow at all, due to this marked difference in the ecological conditions in the two places of growth. Nor do they know that most of our wild plants that can be successfully transplanted and cultivated, can be purchased from nurserymen. These plants grown in the nursery by experts will be much more likely to grow and thrive than the same plants taken from the woods; because they have been raised in soil and environment more nearly approaching that to which they will be transplanted, and because the skilled nurseryman has selected forms which have proved hardy and will grow rapidly.

In this connection, we must say that nurserymen are not excluded from the list of flower predators. Indeed, they are among the very worst, often uprooting the last specimen of some plant from a certain spot. The Bureau of Plant Industry, at Harrisburg, once received a communication from a nurseryman in an adjoining state asking where, in the mountains of Pennsylvania, he could secure several carloads of mountain laurel and rhododendron. Such wholesale collecting will soon exterminate these plants in accessible places, and can only be stopped by sentiment against such destruction assisted probably by an act of the Legislature.

Some Flowers Bear Picking, Others Do Not

Picking the flowers of some plants like the violet, will do no harm, because they have several methods of propagation. They have a perennial root which lives from year to year and produces new

leaves and flowers each year. They also produce a flower bud close to the ground, which never opens into a flower but is self-fertilized in the bud and produces seeds. This flower bud is, of course, never disturbed by the person who picks the flowers. Another reason why the picking of violets does no harm to the plant is that the leaves are left on the plant; therefore, the part of the plant which manufactures the food for the roots and for the maturing of the seeds in the hidden flowers is not disturbed.

There are plants like the Trilliums, on the other hand, which are injured by the picking of the flowers, even if the plants do possess a root which lives from year to year. The Trilliums have three leaves which are located on the upper part of the stem near the flower. In plucking the flower the stem is always broken off below the leaves.

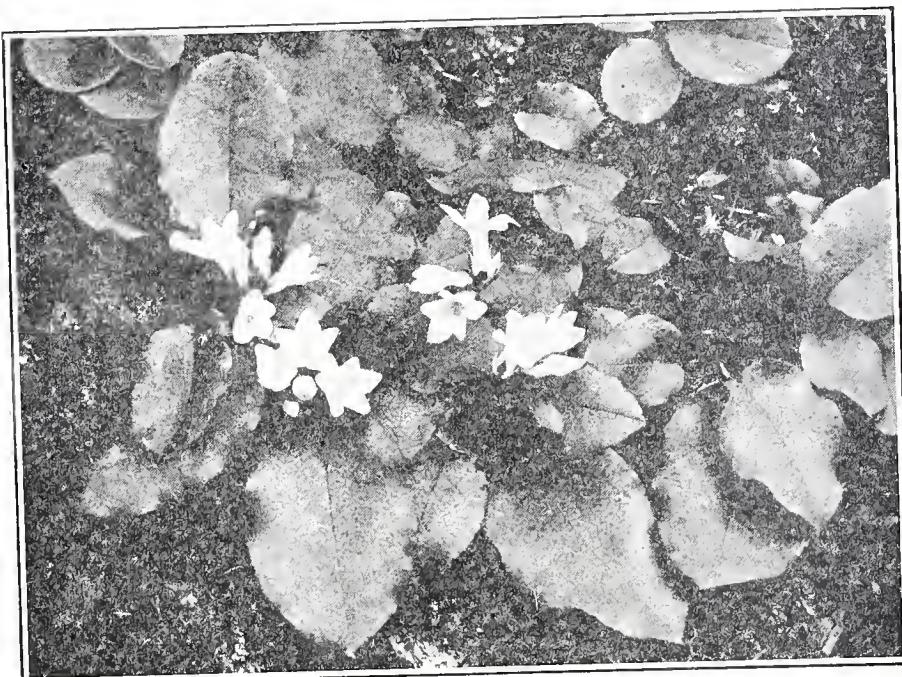


Fig. 3. Trailing Arbutus (*Epigaea repens* L.) One of the most loved plants, fast disappearing.

Thus the organs which manufacture the food for the growth of the root are destroyed before they have grown to full size and before they have had time to manufacture sufficient food to lengthen the root stock very much, if at all. The root is, therefore, weakened to such an extent that it may never again produce a flowering plant.

Legislation or Education, Which?

Statute alone cannot save the flowers. A colony or a few specimens of a rare plant may be uprooted without detection by any interested

person. A few laws, however, that can be enforced will be effective. For instance, the sale of some of our rare plants by street venders and in our public market places might be forbidden, or an act similar to that passed by Maryland a few years ago forbidding the removal of plants unless by written consent of the owner or else under the owner's personal supervision would undoubtedly be a great protection.

A law prohibiting the removal of the entire plant or large branches in automobile or wagon load quantities of such shrubs as our flowering dogwood, red bud, rhododendron, mountain laurel, azaleas and others could be enforced with little additional expense to the state.

The people must be convinced that our wild flowers must be protected and that laws for such protection are justifiable before much if anything can be accomplished by such laws.

A sense of appreciation of the beauty of our wild flowers and a desire to preserve that beauty must be instilled into the hearts and minds of our citizens. Along with this appreciation and desire for preservation of plant life, every one should have a knowledge of the underlying principles of plant growth and reproduction, so that he may know how to pick the flowers from certain plants without injury to those plants; for preservation does not mean that no flowers shall be picked. It does mean, however, that one should know what flowers may be picked and how they shall be picked so as not to destroy the plants or the colony of plants that produce them.

Local and state civic and scientific organizations can and will assist very much in the conservation of our wild plant life. As is true, however, with many other important civic and social problems, no agencies can do the work so quickly and so efficiently as our public schools. The children in the schools today will be our social, civic and political leaders in a few years. Through our boys and girls a community spirit can be aroused which will begin to show its good effect within a short time.

Our schools are so crowded with work which the home and society are continually transferring to them, that it is with reluctance that we suggest any new problems. However, the work herein suggested need not add any additional burden, but might well be made a part of the nature study and botanical work already in the curriculum and a part of the exercises appropriate for Arbor Day programs.

Colored pictures of birds have been used with marked success to stimulate the interest of boys and girls, and, indeed, all lovers of nature, in the protection and conservation of our bird life. Such colored pictures of wild flowers now available in portfolio form may be purchased for a very reasonable price from the New York State Museum at Albany. By the use of these pictures, which should be

in every school in the state, much interest in wild flowers may be aroused, and the pupils may be taught to recognize and name many without extra work by either pupil or teacher. At the same time special attention may be called to those plants that are in danger of extermination. Records and lists of wild flowers, giving place where found, date of blooming and other information should be kept by the pupils. These records can be used to stimulate interest and excite emulation in wild flower study and preservation.

An organization which has already done and is doing splendid work in wild flower preservation in our state is the Pennsylvania Chapter, Wild Flower Preservation Society of America. This society is publishing and distributing valuable literature and is arousing much interest in the preservation of Pennsylvania's beautiful wild flowers.

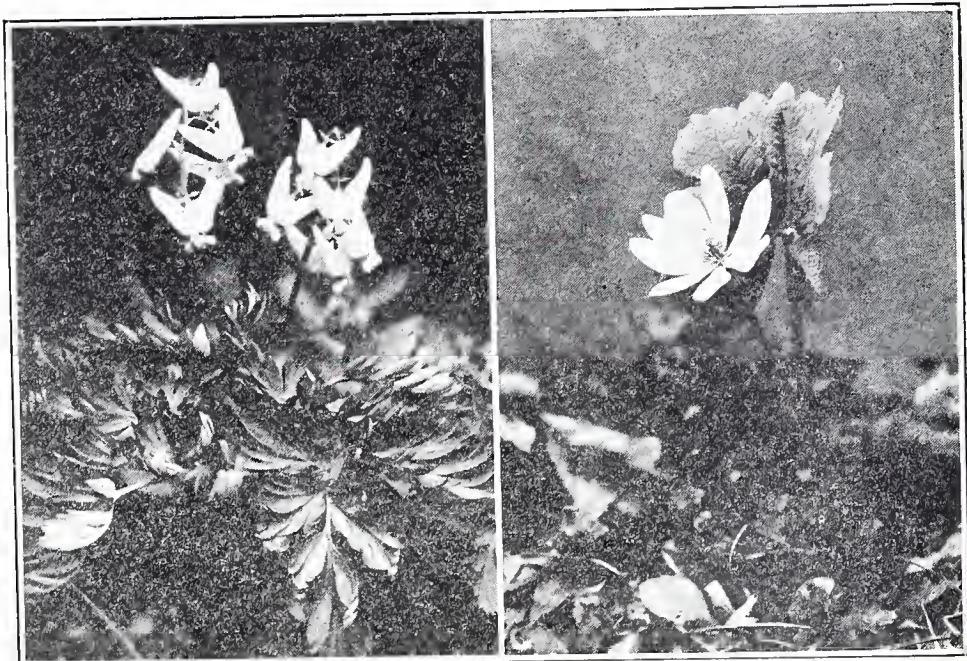


Fig. 4. Dutchman's breeches (*Dicentra cucullaria* (L.) Bernh.)

Fig. 5. Bloodroot (*Sanguinaria canadensis* L.)

The Pennsylvania State Forest Commission has done something for wild flower preservation, in establishing, through Act of Assembly, Monuments for the purpose of preserving for future generations "Unusual and Historical Groves of Trees or Natural Features."

Camping and the gathering of berries and nuts are permitted within these Monuments only when authorized by a forest officer; but the cutting, barking, breaking or removing of trees and shrubs, and the gathering of flowers, plants, roots, and vegetable growth of any description is absolutely forbidden.

The State Forestry Monuments where the above rule applies are as follows:

Detwiler Run, Huntingdon County.....	50	acres
Martin's Hill, Bedford County.....	9	"
Joyce Kilmer, Slope and Summit, Paddy Mountain, Union Co.....	21	"
Ole Bull, Potter County.....	23	"
Mount Riansares, Clinton County.....	13	"
Alan Seeger, Huntingdon County.....	30	"
Mount Logan, Clinton County.....	47	"
McConnell Narrows, White Mountain, Union County,	250	"
Bear Meadows, Centre County.....	350	"

This is one of the very best ways in which to assure the perpetuation of some of our rare wild flowers. The state has a number of places where certain flowers are found due to the peculiar soil, moisture and climatic conditions. In order to retain the wild flowers peculiar to such habitats these ecological conditions must be preserved, and unless they become the property of the state and are protected from drainage, forest removal and other changes, the wild flowers must necessarily disappear from them and consequently from our state.

Plants Which Need Protection

It is difficult to list the plants in Pennsylvania that need protection. The ecological conditions of the state, as previously shown, are so varied that certain plants are rare or unknown in one region and common in another. Many plants growing in the northern glaciated area of Pennsylvania are not found elsewhere in the state. There are plants west of the Allegheny Mountains that do not grow in the eastern part of the state and *vice versa*. Some plants are very limited in their distribution and if once eradicated from the particular areas in which they grow may never appear again in the state. For instance, the snow trillium (*Trillium nivale*) has been found in only two places in the state. In one of these it probably has already been exterminated, and unless the other is guarded with the greatest of care, it will be gone from this place, too, in a short time.

Sweet bay or swamp magnolia (*Magnolia virginiana* L.) is a characteristic shrub of the coastal plain. It is common in the Pine Barrens of New Jersey and is found in a few places in southeastern Pennsylvania. Its distribution, however, in the state is limited and, as the flowers are sweet scented and have a market value, the shrub is likely to be eradicated. Witmer Stone in "Plants of Southern New Jersey" says that in June, "the atmosphere of the Pine Barren swamps is heavy with the perfume of the Magnolia, and we recognize its presence long before we detect the creamy, cup-shaped flowers

nestling among the shining green leaves." He says further, "unfortunately Magnolia flowers have a market value, and the curbstone flower venders of Philadelphia ruthlessly strip them from the trees, often breaking the latter to such an extent as to permanently ruin them."

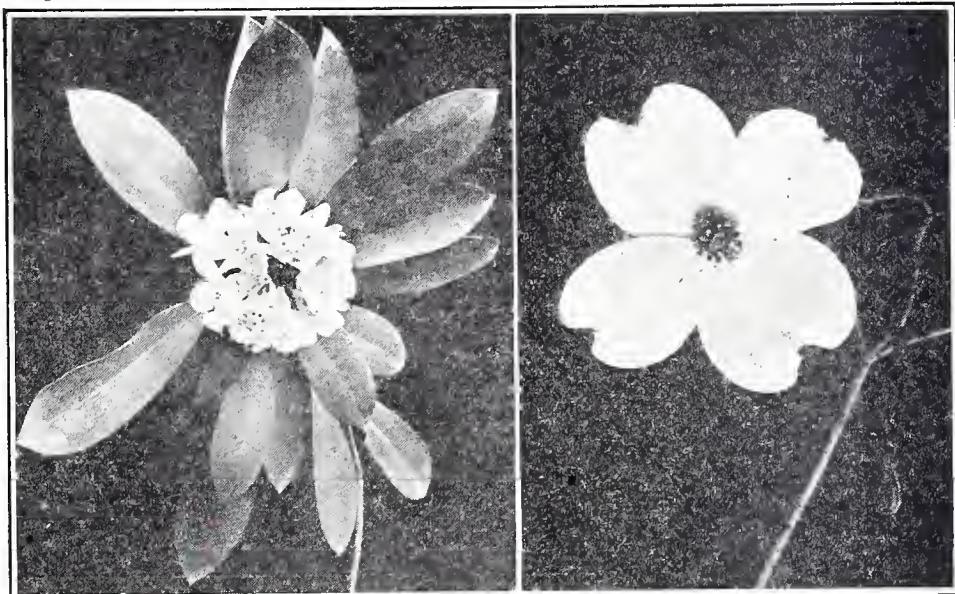


Fig. 6. Great laurel (*Rhododendron maximum* L.)

Fig. 7. Flowering dogwood (*Cornus florida* L.)

So much sentiment has been aroused against the mutilation and destruction of the dogwood in some places, that it is said people are ashamed to be caught with it.

Our beautiful pink lady slipper (*Cypripedium acaule*) is very rare in parts of Pennsylvania but it is not uncommon to find it, as well as other disappearing plants, for sale in the markets and streets of our large cities. This practice should be discouraged by diminishing the demand for these plants or by prohibiting their sale.

The box huckleberry in Pennsylvania has been found at two stations only, these being in Perry County. If these two places are not guarded and the forest which protects the plant is removed, the box huckleberry will be eliminated, no doubt forever, from the flora of our state.

Nathan H. Phillips in quoting Dr. O. E. Jennings in *Trillia*, Proceedings of the Botanical Society of Western Pennsylvania No. 7, page 7, October, 1923, has the following to say about destruction of wild flowers in western Pennsylvania:

"The nearest station to Pittsburgh of the fringed gentian, which formerly existed in two or three places in Allegheny County, is one a few miles from New Castle. The persimmon was formerly common

in what is now Schenley Park and various places in the county; but now, outside of some in cultivation, there are about a half dozen trees in the western end of the state. The walking fern, heretofore fairly common in rocky ravines in and about the city, is very rare in the county. The pink and yellow lady's slipper orchids which are common in the Pittsburgh districts, are not known to occur native in the county. Only one patch of the royal fern is known in this county. In only one small spot along the slope of the Monongahela river, near Homestead, can the yellow passion flower be found, and this is likely to be destroyed at any time. Three other places are the only ones recorded where this plant may be found in the



Fig. 8. Early Trillium (*Trillium nivale* Riddell.) An early bloomer that grows at only one station in the state.

western part of Pennsylvania. The nodding trillium, for the western part of the state, is recorded as being found only in one small patch in this county. The chain fern in Western Pennsylvania is known to occur only near Hartstown, Crawford County. A long list of spring and early summer flowers might be given which were formerly common or abundant about the city but are rapidly becoming rare or extinct through careless gathering which often amounts to vandalism, the flowers being ruthlessly pulled only to be soon thrown away. Such a list including trailing arbutus, the various trilliums, dog's-tooth violet, lungwort, marsh marigold, blue phlox, columbine, fire

pink, the various forms of lilies, lupines, and so on for perhaps twenty or thirty species."

Below is given a list of plants which may seem large but is really very small when the great host of flowering plants is taken into consideration. These should not be picked at all or should be picked with care. Let us keep in mind that while some of these plants may be abundant in certain regions the same plants may be very rare elsewhere in the state, and that the ruthless picking from the areas where they are common may be the means of their extermination in the state.

A few plants in the list, such as the flowering dogwood, redbud, and other shrubs, may not be exterminated, but the careless breaking of the branches mars their beauty by leaving them in an unnatural, scraggly condition. The flowers should be picked from these shrubs with the same care and thoughtfulness with which they would be picked if the shrub stood in a private lawn or a public park.

Let us, therefore, protect the following plants by not picking the flowers at all or by picking them with care, so that the scenery of our beautiful state may be enhanced by their increased growth and abundance:

- Columbine (*Aquilegia canadensis* L.)
- Arbutus (*Epigaea repens* L.)
- Gentian (*Gentiana erinita* Froel.)
- Hepaticia (*Hepaticia triloba* Chaix.)
- Dutchman's Breeches (*Dicentra cucullaria* (L.) Bernh.)
- Bloodroot (*Sanguinaria canadensis* L.)
- Lily (*Lilium canadense* L.)
- Lily (*Lilium Philadelphicum* L.)
- Lily (*Lilium superbum* L.)
- Pitcher Plant (*Sarracenia purpurea* L.)
- ²Yellow Lady Slipper (*Cypripedium pubescens* (Willd.) Knight.)
- Pink Lady Slipper (*Cypripedium acaule* Ait.)
- Showy Lady Slipper (*Cypripedium hirsutum* Mill.)
- Yellow fringed Orchis (*Habenaria blephariglottis* (Willd.) Torr.)
- Large Purple-fringed Orchis (*Habenaria fimbriata* (Ait.) R. Br.)
- Small Purple-fringed Orchis (*Habenaria psyeodes* (L.) Sw.)
- Grass Pink (*Calopogon pulchellus* (Sw.) R. Br.)
- Indian Pink (*Arethusa bulbosa* L.)
- Snake-mouth (*Pogonia ophioglossoides* (L.) Ker.)
- Whorled Pogonia (*Pogonia verticillata* (Willd.) Nutt.)
- Showy Orchis (*Orchis spectabilis* L.)
- Rattlesnake Plantain (*Epipactis pubescens* (Willd.) A. A. Eaton.)
- Ladies Tresses (*Spiranthes cernua* (L.) Richard.)
- Slender Ladies Tresses (*Spiranthes gracilis* (Bigel.) Beck.)
- ²Sessile-flowered Trillium (*Trillium sessile* L.)

¹All the plants of the Orchid family should be protected.

²All species of Trillium should be protected.

Snow Trillium (*Trillium nivale* Riddell.)
 Large-flowered Trillium (*Trillium grandiflorum* (Michx.) Salisb.)
 Painted Trillium (*Trillium undulatum* Willd.)
 Shooting Star (*Dodecatheon meadia* L.)
 Slender Blue Flag (*Iris prismatica* Pursh.)
 Dwarf Iris (*Iris verna* L.)
 Tway Blade (*Liparis liliifolia* (L.) Richard.)
 Twinleaf (*Jeffersonia diphylla* (L.) Pers.)
 Fringed Polygala (*Polygala paucifolia* Willd.)
 Passion Flower (*Passiflora lutea* L.)
 Blue-eyed Mary (*Collinsia verna* Nutt.)

Ferns:

Royal Fern (*Osmunda regalis* L.)
 Walking Fern (*Camptosorus rhizophyllus* (L.) Link.)
 Cliff Brake (*Pellaea atropurpurea* (L.) Link.)
 Chain Fern (*Woodwardia*, two species)
 Climbing Fern (*Lygodium palmatum* (Bernh.) Sw.)
 Maidenhair Fern (*Adiantum pedatum* L.)

Wood Anemone (*Anemone quinquefolia* L.)
 Bluebells (*Mertensia virginica* (L.) Link.)
 Marsh Marigold (*Caltha palustris* L.)
 Wild Lupine (*Lupinus perennis* L.)
 Golden Club (*Orontium aquaticum* L.)
 Yellow Dog's-tooth Violet (*Erythronium americanum* Ker.)
 White Dog's-tooth Violet (*Erythronium albidum* Nutt.)
 Redbud (*Cercis canadensis* L.)
 White Clintonia (*Clintonia umbellulata* (Michx.) Morong.)
 Yellow Clintonia (*Clintonia borealis* (Ait.) Raf.)
 Golden Seal (*Hydrastis canadensis* L.)
 Ginseng (*Panax quinquefolium* L.)
 Greek Valerian (*Polemonium reptans* L.)
 Cardinal Flower (*Lobelia cardinalis* L.)
 Fire Pink (*Silene virginica* L.)
 American Holly (*Ilex opaca* Ait.)
 Sweet Bay (*Magnolia virginiana* L.)
¹Club Moss (*Lycopodium* spp.)
 Laurel (*Kalmia latifolia* L.)
 Pink Azalea (*Azalea nudiflora* L.)
 Great Laurel (*Rhododendron maximum* L.)
 Flowering Dogwood (*Cornus florida* L.)
 Box Huckleberry (*Gaylussacia brachycera* (Michx.) Gray.)

¹Collecting the Club Mosses in large quantities for Christmas decorations should be discouraged.

